Government Publications

MARINE AND SAFETY
TRAINING IN THE EASTERN CANADIAN
OFFSHORE PETROLEUM INDUSTRY

EXECUTIVE SUMMARY



CAUTIONARY NOTE

This report is the property of the Royal Commission on the Ocean Ranger Marine Disaster. The contents of this report are confidential and should be treated as such. Reproduction by any means, in whole or in part, is not permitted without the written consent of the Royal Commission. The opinions, conclusions, and recommendations are those of the authors. Acceptance of this report by the Royal Commission is for contractual purposes only and should not be construed as acceptance of any of the opinions, conclusions, and recommendations contained herein.



MARINE AND SAFETY
TRAINING IN THE EASTERN CANADIAN
OFFSHORE PETROLEUM INDUSTRY

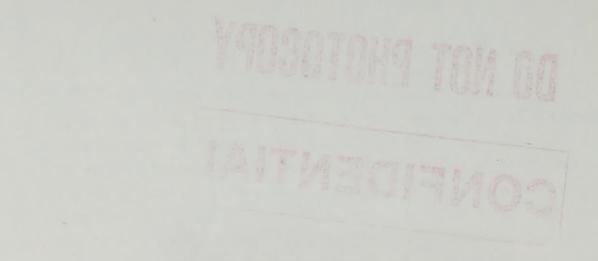
EXECUTIVE SUMMARY



PREPARED BY:

THE COLLEGE OF FISHERIES, NAVIGATION, MARINE ENGINEERING AND ELECTRONICS

ST JOHN'S, NEWFOUNDLAND



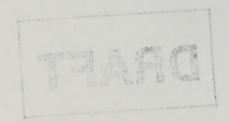




TABLE OF CONTENTS

EXECUTIVE SUMMARY

		Page No
1.	Introduction	1
2.	Study Strategy	3
3.	An Overview of Training	4
4.	The Mobile Offshore Drilling Unit (MODU),	
	and Conclusions	7
	Types of MODU/Associated Hazards	
	MODU Crew	
	Crew Training	
	Basic Emergency Training	
	Specialist Emergency Training Marine Crew Training	
	Industrial Personnel	
	The document	
5.	Marine Support, and Conclusions	22
6.	Aircraft Support, and Conclusions	26
0 •	ALLOLOLO Dapport, and conclusions	20
7.	General Conclusions	28

ACKNOWLEDGEMENTS

The College gratefully acknowledges the help and assistance of the Commission Staff in conducting this study. Thanks are also due to all those who assisted the study team by supplying information and demonstrating facilities. The study team - Jack Strong, Donald Williamson, David Bazeley and Sydney Hynes - was directed by Dr C R Barrett, the President of the College.

This summary of the report and its conclusions was prepared by Hollobone, Hibbert and Associates, London, England.

Digitized by the Internet Archive in 2024 with funding from University of Toronto

1. INTRODUCTION

The Royal Commission on the Ocean Ranger Marine Disaster as part of one of its terms of reference, to investigate training, certification and safety of persons on Mobile Offshore Drilling Units (MODUs) and their support craft, commissioned the College of Fisheries, Navigation, Marine Engineering and Electronics, St John's, Newfoundland, to carry out a study on training for the Eastern Canadian Offshore Petroleum Industry.

The objectives of the study were:

to describe and compare training practices in Canada and other countries,

to assess the adequacy of current practices and draw conclusions as to any outstanding needs for the training of personnel working in the Eastern Canadian offshore industry.

These objectives were considered in relation to four major aspects of the industry:

- i) the training of all personnel in safety and survival;
- ii) the additional specialist training required by persons with designated safety responsibility in an emergency;
- iii) the training needed by persons over and above their normal industrial, marine or aviation vocational training, to enable them to work safely on a MODU or its support craft;
 - iv) the training of marine and aviation personnel in rendering assistance following an incident.

SPECIMENOS CONT.

laborated and in severage age

And deposit of marriage interface address one officers, and

to the bank and the part of the parties of the parties of the section to a contract the contract to the section of the section

the contract of the property

plantation has disting or the managed fit to install and it

the secured is believed addition and the secure of the sec

ne contrat franchis and the contrat of below published at the

collector of leaching shibites box animas to galutest out tol

The area of concern was the Eastern Canadian Continental Shelf, from the Canadian/United States boundary North to approximately 75°N, and the scope was restricted to the exploration drilling phase and related support by vessel and helicopter. Training in other countries was also examined as a comparison with Canadian practices and to see to what extent existing international standards on foreign drilling units and support vessels working off Eastern Canada could be accepted as satisfactory Canadian requirements.

It is important to note that all the data used in the report were collected prior to the end of spring 1983. Improvements have been made over the past year in the areas of marine survival and safety training for the Eastern Canadian offshore petroleum industry.



2. STUDY STRATEGY

A study group of three researchers, under the general direction of Dr C R Barrett, President of the College, prepared the report.

Between October 1982 and April 1983, the team visited 73 organizations in Canada, the United States, the United Kingdom, Norway and the Netherlands. They also made literature searches and obtained information from another 22 organizations by telephone and 14 by mail.

The organizations selected for visit were government agencies, marine and petroleum industry training establishments, oil companies, drilling and services companies and search and rescue organizations.

In many cases the information obtained was of a subjective nature. Only Norway has detailed requirements for much of the training laid down in legislation. Industry standards are variable and are applied by the will of the industry, rather than as a requirement. Likewise training and certification differs widely between the long established marine training and the much more recently established MODU training.



3. AN OVERVIEW OF TRAINING

The reasons for training are discussed in the report. Industry and marine training can enhance a person's work skills and be tested in the workplace. Emergency training can only be tested in a real situation.

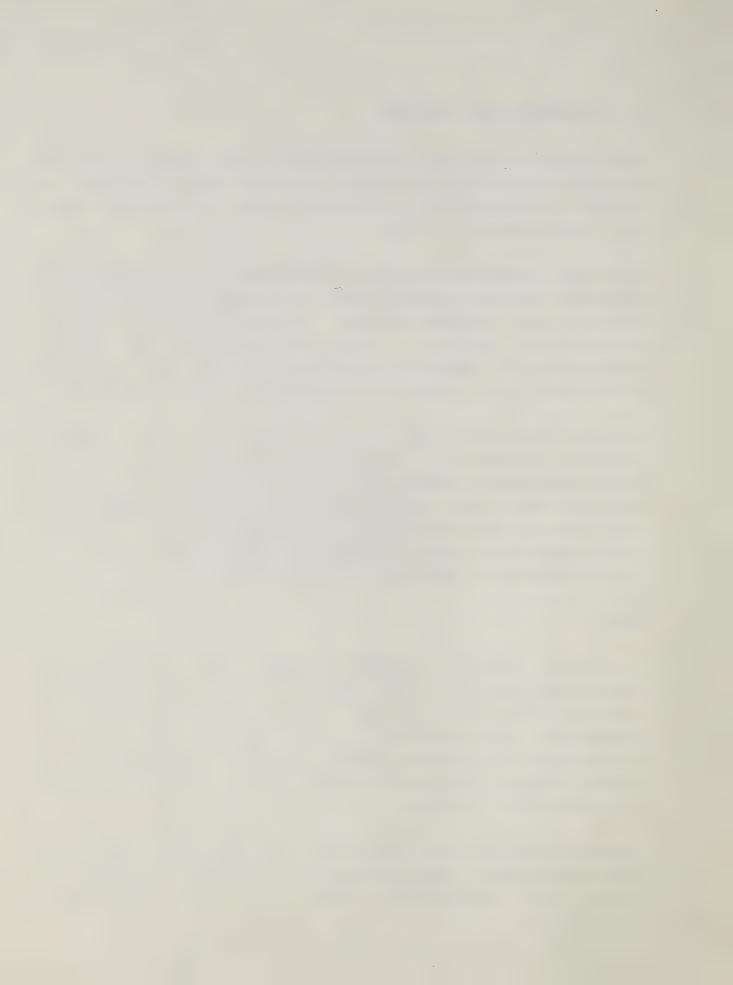
Training is available onshore in classrooms, on simulators or at practical training grounds using real equipment such as life saving or fire fighting equipment. It can also be done offshore as on-the-job training. While industry accepts the former, particularly for emergency training, there is still a strong feeling that 'real' practice must take place at the work site.

The four countries studied, the US, Norway, the UK and Canada, display a diversity of training approaches, and very different funding practices, ranging from the Norwegian belief that society as a whole must accept the responsibility to the US system where industry or the individual must be responsible for both provision and funding (even though Government may make a requirement). The UK and Canada fall somewhere in between these extremes.

USA

In the USA, industry is largely self-regulating. Government sets requirements for certain key figures in respect of certification - such as the person in charge of various types of MODU, or for specialist qualifications - for instance well control certification at various grades for drilling personnel. In general however there are few Governmental requirements, and none for basic safety training.

Training establishments are usually privately owned and funded from course fees. Some universities, notably the University of Texas, which collaborates closely with the International



Association of Drilling Contractors (IADC), play their part, but even then funding is directly from course fees and sale of publications.

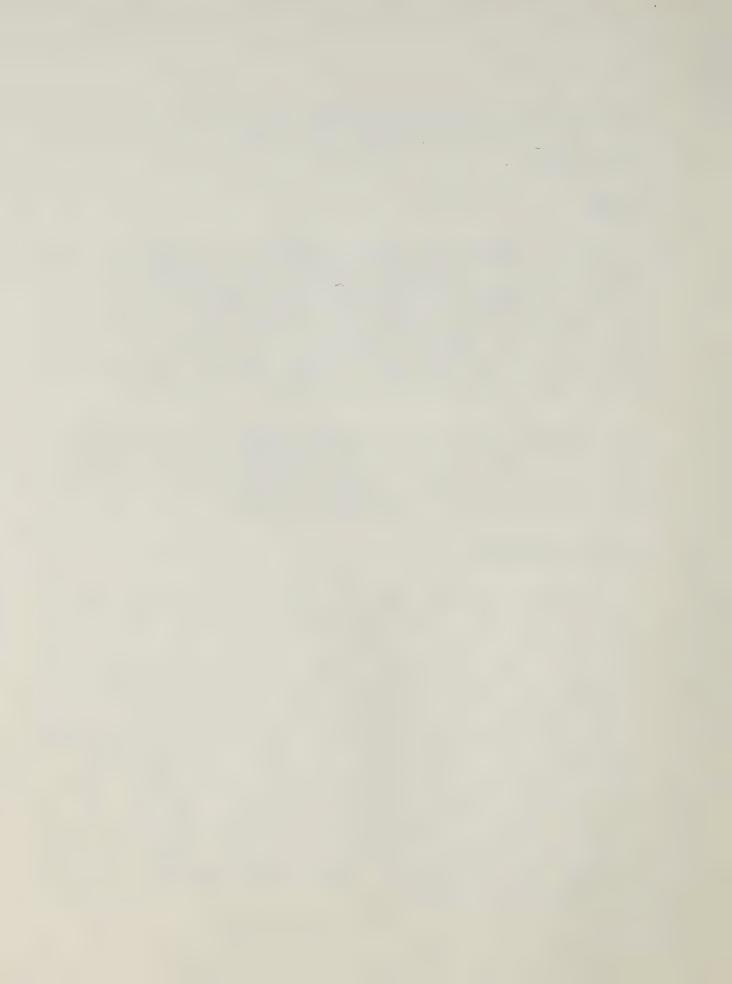
Norway

In Norway, courses have been established in conjunction with existing marine or technical colleges. The Norwegian Operators' Association (NIFO), has funded specialist facilities, notably the very expensive (\$6 million) fire ground and survival craft platform at the Norwegian Academy of Sea Rescue and Damage Control. Other maritime schools have received funds to set up special courses from companies with bases in their area.

Both vocational and safety training courses must be approved by the education authorities and the regulatory agencies. Generally there are no fees payable by those attending such courses, which are financed from central Government funding.

The United Kingdom

In the United Kingdom, much of the training effort revolves around the Offshore Petroleum Industry Training Board (OPITB), which was set up by the Government and funded by a levy on the industry. When Government support for training boards was withdrawn, the OPITB was 'adopted' by industry which injected an initial capital sum. Funding is now from course fees. It is managed by a Board comprising members from industry, trade unions and educational institutions. It offers training itself and works in conjunction with two non-profit making regional bodies, the Scottish Offshore Training Association (SCOTA) and the Petroleum Training Association North Sea (PETANS), whose members include all offshore companies in their respective areas (Scotland and East Anglia). They arrange training courses as requested by their members.



Two major educational establishments provide a great deal of the UK safety and survival training - Robert Gordon's Institute of Technology in Aberdeen and the College of of Further Education in Lowestoft. There are commercial schools offering specialist training in, for instance, offshore crane operation and drilling.

Canada

In Canada, the Petroleum Industry Training Service (PITS), an industry-governed non-profit making organization, has provided onshore drilling training since 1949 and is now becoming involved in offshore matters.

The Canadian Oil and Gas Drilling Regulations and Canadian Shipping Act require emergency training for offshore workers, as do the Newfoundland and Labrador provincial government regulations. The Canadian Ministry of Transport's Marine Emergency Duties Course, MED II, is available at public educational establishments in Canada. In Newfoundland and Nova Scotia special courses have been developed for MODU workers. There is no mandatory standard for safety training in the Eastern Canadian offshore.

Newfoundland and Labrador Petroleum Regulations (1977) require from the industry some expenditure on research, development, education and training, but only a small proportion had been spent on training by the end of 1982.



4. THE MOBILE OFFSHORE UNIT (MODU)

Types of MODU and Associated Hazards

The report considers the three basic types of MODU: jack-ups, semi-submersibles and drillships and discusses their advantages and disadvantages.

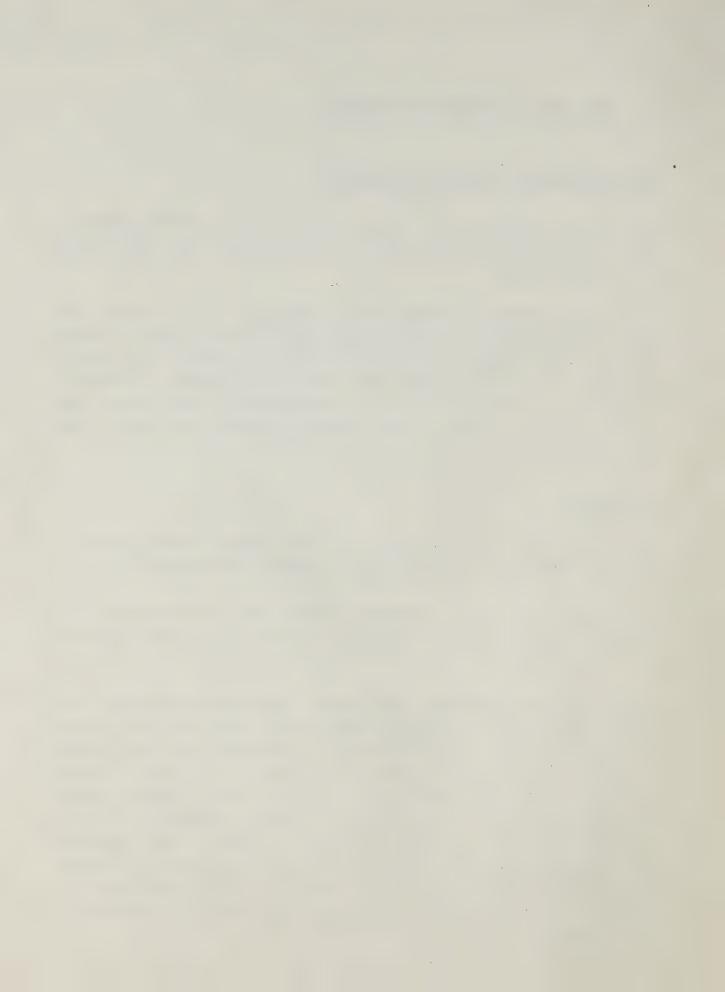
Industrial hazards include fire, blow-out, H₂S emission and accidents to persons caused by work activities. Marine hazards include bad weather, particularly violent storms, ballasting, jacking up or down, towing and other rig movement activities, structural or stability failure, instability of the seabed under a jack-up leg, collision with vessels, icebergs or pack ice and helicopter crash.

MODU Crew

The composition and structure of the marine crew varies on different MODU types and depends on national practices.

Drillships have fully certified officers and trained seamen, as required by the flag of registry. Standards between countries are very similar.

Semi-submersibles exhibit the greatest variation in manning. For units registered in Norway, the United Kingdom and Canada, manning scales are set by the marine administrations, and require certified officers and seamen, even while on station. Norway requires the Master, Mate (known as the Stability Section Leader) and Watchstanders to have special training in MODU operation, in addition to their conventional marine training. US registered semi-submersibles only require certified crew for long voyages, and only then if self-propelled. However, the US substitute key marine crew who have qualified for 'special industrial' certificates.



Jack-ups usually have only the barest skeleton marine crew on board when on station. There are no Canadian registered jack-ups, at present.

For Norwegian and British jack-ups the maritime administrations determine crewing levels on an individual basis. If self-propelled, they would probably be required to have a full complement of deck and engineering officers and seamen.

The composition of the drilling crew is similar for all MODU types regardless of flag. The drilling crew is divided into two 'tours', who work in twelve hour shifts. They are supported by various specialist service personnel and are usually directed by a representative of the lease operator.

Basic Emergency Training

The USA has no requirement for basic emergency training, although some companies provide on board instruction. Norway, the UK and Canada all require such training. The first two countries have agreed standards: in the UK, the UKOOA Guidelines, drawn up by industry to satisfy a legal requirement that all persons shall be suitably trained; in Norway the LEIRO II syllabus, required by law. The standards are comparable, with two-week long courses for each, but for classes of occasional offshore worker, the UKOOA Guidelines allow for various lesser grades of training.

In Canada, the Newfoundland Petroleum Directorate requires workers to go through the MED II course, which was designed by the Canadian MOT for mariners, or an acceptable equivalent. Both the East Coast and Arctic Petroleum Operators Associations (EPOA/APOA) and the Newfoundland Offshore Petroleum Impact Committee have made proposals, which are being implemented. The EPOA/APOA proposed Basic Offshore Training (BOT) course offers four levels of training, to satisfy the need to train various classes of



occasional visitor as well as regular workers. The Newfoundland Basic Offshore Survival Training (BOST) proposal is comprehensive and the format, two separate weeks, is designed to fit in with offshore work patterns. Two schools in Eastern Canada are equipped to provide the necessary training for the immediate future.

Conclusions on Basic Safety Training

General:

- 1. Norway, the UK and Canada all require some basic safety training. This training is not required in the US.
- In Norway the standards are laid down by government, in the UK the industry has established standards through the UK Offshore Operators Association, to meet a general government requirement. In Canada, the National and Provincial Governments set standards, accepting equivalents.
- 3. The standards in the UK and Norway are similar to those in Newfoundland (BOST), with permanent offshore workers spending about two weeks on accident and fire prevention, fire fighting, first aid, survival craft operation, water survival and helicopter under escape.
- 4. The EPOA/APOA BOT involves five days training for regular offshore workers. There are three levels of lesser training for grades of casual worker. Conditions are comparatively benign off Nova Scotia. Newfoundland, where conditions are worse, does not accept BOT.
- 5. The North Sea countries have an adequate number of well equipped training centres (there may be some shortages at times of peak demand).



Training needs in Canada:

- 1. There is a need for persons on MODUs off Eastern Canada to have basic emergency training, appropriate to the harsh environmental conditions.
- 2. The content of a suitable course should comprise two main core components, namely: Offshore Hazards, Fire Prevention and Control; and Rig Abandonment, Rescue and Survival, to be taken by all regular workers. The course should be supplemented by lectures, demonstrations and hands-on experience in Helicopter Procedures; Cardiopulmonary Resusitation (CPR); Emergency Safety Oriented First Aid (SOFA); and Hypothermia, to be taken by selected persons.
- 3. The MED II standard required by the national Government is not specific to MODUs. The EPOA/APOA BOT and Newfoundland BOST, are designed for MODUs. Comparison between these and the Norwegian and British curricula would assist in devising the optimum course.
- 4. It is necessary to have different categories of training for persons spending different amounts of time offshore.
- 5. Categories could be:
 Occasional workers (up to three or four visits with no overnight stays)
 Seasonal workers (up to twelve nights per year offshore)
 Regular workers (over twelve nights per year offshore).
- 6. Training should be given in procedures to all who may have occasion to use radios.
- 7. Consideration should be given to harmonizing training standards throughout the region, taking due account of the different environmental conditions.



8. A review should be made of the facilities in the existing training establishments to ensure that they are adequately equipped and staffed to provide training for expected numbers of trainees.

Specialist Emergency Training

There are few formal requirements for specialist emergency personnel. In the US the only requirement is to have a number of certified lifeboatmen; in the UK and Norway, the requirements are ill-defined, although in practice training is usually given to fire teams and lifeboat coxswains. A number of schools offer suitable courses, for individuals and complete teams. In Canada, COGLA requires by directive that the crew has sufficient damage control training and this involves a demonstration of the damage control team at work.

Conclusion on Specialist Emergency Training

General:

- 1. No country has sufficiently addressed the subject of specialist emergency training, although in Norway and the UK numerous courses are available and are used by industry.
- 2. Some individuals, such as lifeboat coxswains and some groups, such as fire and damage control teams, need specialist training. General safety training does not sufficiently address specialist needs.
- 3. Where training is provided it is generally thorough and realistically simulates actual emergency conditions.

Canadian needs:

1. The isolated, distant nature of the industry makes self-help emergency action particularly important for the region.



- 2. Little emergency team or specialist training is available in Canada, and facilities need to be developed, probably at existing institutions offering basic safety training.
- 3. Subjects to be covered should include damage control, team and specialist fire fighting, man overboard and survival craft handling.
- 4. Conditions must accurately simulate those found in service and training exercises must be carried out in the most severe conditions practicable without hazarding the trainees.
- 5. Regular drills and periods of refresher training are needed by specialists to keep them in preparation for an emergency.

Marine Crew Training

The practices differ between the US, which tends to regard a MODU as an industrial site in the sea and Norway, the UK and Canada which regard it as a ship engaged in an industrial activity and require some marine officers and deckhands. In the US special industrial licences have been developed, to allow drilling or other industrial personnel to assume positions of command or other responsibility. These require proof of considerable practical experience in marine or offshore operations and an examination in marine subjects, which is not so rigorous. The other countries require certificated mariners. In Norway MODU experience and additional training is required for senior personnel, usually on top of their conventional marine training.

Certain key positions relating to marine operations from a MODU, such as dynamic positioning equipment (DP) operator and ballast control room operator have no direct counterparts, although simular marine tasks exist on ships.



Only Norway has addressed the problem of their experience and qualification, and then only for ballast controllers.

Conclusions on Marine Crew Training:

Person in Charge:

General:

- 1. The Person in Charge must fully appreciate the relationship between drilling activities and the capabilities and limitations of the unit.
- Neither a Master Mariner nor a Toolpusher can be assumed to have all of the necessary knowledge and appreciation to command a MODU without specific training (however obtained) directed towards operations of the MODU type concerned.
- 3. Canada has, at present, no system for conducting, approving or certifying either MODU-related training for Masters or marine training for Toolpushers.
- 4. THE USCG Special Industrial Master's Licence, while offering a conceptual model, does not require sufficient depth of knowledge for safe operation in the harsh Eastern Canadian marine area.

Canadian needs:

1. Consideration should be given to establishing a course, to familiarize licensed Masters with the special aspects of MODUs and drilling operations. The course could lead to a 'MODU Masters' endorsement.



2. For jack-up units on station, the toolpusher could appropriately be the person in charge. A course should be developed to provide such a person with suitable familiarization with Eastern Canadian offshore conditions and provide training in marine emergencies.

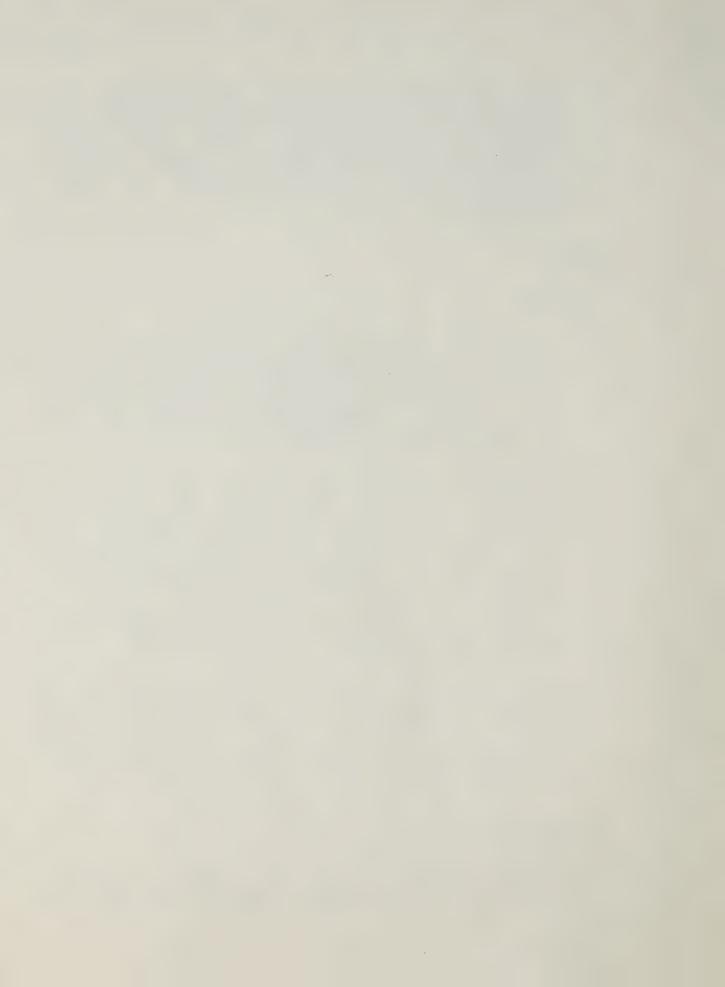
Mates:

General:

- Canada has no system for conducting, approving or certifying specific training for MODU Mates. The only domestic unit to date is crewed by Mates holding marine certificates. The MODU-specific training on this unit is organized by the operator.
- 2. A Mate on a MODU on location has only some of the duties of a merchant vessel Mate, but he has some additional duties which are unique to the job. The USCG Special Industrial Mate's Licence is designed to provide the necessary training for all of these duties, However the examination standard is low compared to regular marine certificates, but may be satisfactory for the sheltered waters of the Gulf of Mexico.
- 3. Standard marine training is a good foundation for the training of MODU Mates, although it does not address the special features of MODUs. The Norwegian MODU Stability Section Leader certificate course supplies the additional training.

Canadian needs:

1. Company MODU training for Mates would be appropriate but there are few suitable positions available where



practical experience in a junior capacity can be obtained.

Since the Mate is a central figure in an emergency on board he should be trained to an advanced standard in fire fighting, damage control, man overboard and the deployment of survival craft.

Watchstanders:

General:

- 1. The Watchstander has a central role in the operational marine safety of semi-submersibles, particularly in respect of ballast control functions. On most units, he has other duties as well, which are often similar to those of a marine watchkeeper.
- 2. There are as yet no widely accepted standards in Watchstander's training. Only Norway has any formalized program. Elsewhere there has been a great deal of recent activity in developing new courses, many directed to the stability of semi-submersibles. This is a necessary part of a Watchstander's training but is not in itself sufficient.
- 3. Watchkeepers on drillships are certified mariners. Their duties are consistent with normal marine practice and are adequately covered by regular training programs. There is no equivalent position on jack-up units except during moves, when normal towing practices are followed. These are adequate.



4. Canada has no published standards for Watchstander's training for domestic or foreign units on the Continental Shelf.

Canadian needs:

- 1. Watchstander's training should include: stability of multihull MODUs both when intact and damaged, ballasting procedures in the event of damage or loss of the main control system as well as the effects of anchor tension on stability and trim of MODUs, and other aspects of his duties as required. The Watchkeeping Mate certificate would be a good basis on which to develop courses.
- Watchstander's training should include some instruction on the actual unit's system. Consideration could be given to independent examination of his knowledge.

Engineers:

General:

- In Canada, there is a general shortage of persons holding a First Class Engineer's Certificate.
- 2. In Canada, there are no specific MODU related training course or examinations for engineers on MODUs under CCG regulations.
- 3. The Engineer is a senior person whose expertise is critical in times of emergency involving mechanical and electrical breakdowns and malfunctions.
- 4. Current examination standards to normal First or Second Class marine certificate levels, or their equivalent appear adequate.



The USCG MODU Engineers examination is of a lower standard, and may not be appropriate in Eastern Canada.

Norway is the only country which requires a licenced engineer (or equivalent) to take special MODU endorsement courses in addition to Marine Engineer Officer Training. The Norwegian Technical Section Leader's certificate is issued after successful completion of this additional training.

Canadian needs:

1. Consideration should be given to setting up a course to enable suitably qualified engineers (not necessarily marine) to understand all the requirements of MODU machinery and systems. This could be used as the basis of 'MODU engineer' certification.

Radio Operators:

- 1. The Certificate required by a MODU Radio Operator is based on the marine radio equipment fitted where the unit is classed as a ship.
- 2. The present restricted radiotelephone operator's certificate does not itself indicate a sufficient level of competency to be radio operator on a MODU. It can be satisfactory if the employer provides adequate supplementary training in the operation of specially installed equipment and in company and other emergency procedures.
- 3. Where the MODU carries operators with marine certificates higher than the restricted radiotelephone operator's certificate, the training is adequate.



The earth station endorsement proposed by the DOC/CCG task force would be beneficial where the MODU is equipped with a satellite communications system.

Crane Operators:

General:

- 1. Crane operations, if not properly conducted, can pose considerable hazards to the MODU or to an associated vessel.
- In Canada, there are no regulations requiring training or certification of offshore crane operators, nor are there any specifically organized courses for crane operators.
- 3. In Europe and the US, crane operator courses are available and on the job tutoring is also common. US training is usually on the job with packaged instruction and theoretical courses.

Canadian needs:

 Consideration should be given to establishing a facility for realistic offshore crane training in Eastern Canada.

Helicopter Landing Officers:

General:

The position of HLO is not officially recognized on most units operating off Canada, and is not filled by any particular class of crew member.



No specific training takes place other than that obtainable on the job.

In a complex and potentially hazardous situation, the presence of a trained person, able to understand the sequence of events and react to any incident, is essential.

Canadian needs:

1. A committee, comprising helicopter operators, MODU owners and government, should be set up to consider existing European training courses, with a view to requiring similar training in Canada.

DP Operators:

General:

- 1. Good on the job training can be adequate, if subject to management commitment and control, except for emergency actions which need to be rehearsed under simulated conditions.
- 2. Simulator training is the only practical way to practise emergency actions, and if realistic is adequate.

Canadian needs:

1. Consideration should be given to the establishment of a suitable course, and the provision of simulator facilities. This may not be necessary if DP equipment suppliers can provide adequate training.



Weather and Iceberg Observers:

- 1. The training of Observers appears to be adequate for their tasks.
- The policy of new Observers being accompanied by experienced personnel is a good safeguard, as well as providing for on the job training after the initial onshore courses.

Drilling Crew Training

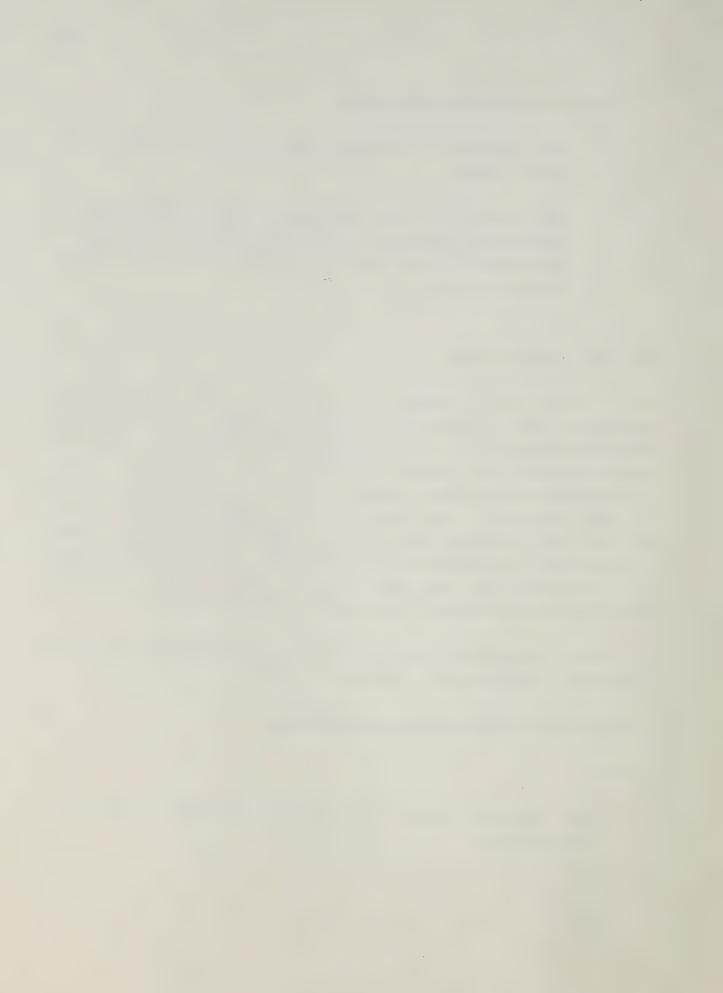
Only Norway has a comprehensive training scheme for drilling personnel, which is orientated towards offshore. It was designed originally to build up a national drilling capability. The other administrations all require blow-out prevention (well control) training for key drilling personnel and in the case of the US all drilling personnel. Although this well control training is not specific to offshore and is not additional to the normal requirements for onshore drilling, because of the special hazards of a blow-out in the confines of a MODU out at sea, the requirements are briefly discussed in the main report.

In Norway training and certification is mandatory for the sub sea engineer, responsible for the sub sea BOP.

Conclusions on Key Drilling Crew Training

General:

 Most countries require well control training, at least for key personnel.



2. Apart from what is done in Norway there are few comprehensive requirements for training of drilling personnel in their routine work skills.

Canadian needs:

- 1. Adequate well control training is necessary for all key offshore drilling personnel. It should include instruction on the sub sea BOP, unless in the case of a jack-up, this is not used.
- 2. Sub sea engineers need to be well trained in the use and maintenance of the sub sea BOP.
- 3. There are adequate facilities for drilling training in Canada, but there is a need for consultation between Government, industry and the educational sector to make the best use of them, for specialist offshore training.
- 4. Reciprocal acceptance of Canadian well control certification with that of other countries should be sought. Due to the nomadic nature of the industry it is a great advantage if drilling personnel can operate in other countries without re-certification.



5. MARINE SUPPORT

Without marine support, the offshore industry could not function. Offshore support vessels have been developed which are large, powerful and equipped with sophisticated control or even dynamic positioning systems.

Support vessels perform a number of roles: they supply the MODUs, carry diving support systems, are used for handling MODU anchors and for diverting approaching icebergs away from MODUs. In some offshore areas there are also dedicated standby vessels, ready to rescue persons who fall into the sea from MODUs.

The normal maritime training of officers and seamen, while adequate for general aspects of marine duties, does not cover the specialized aspects of marine support. Any additional training needs to be specific to the particular support task, and must be realistic using the actual (or similar) equipment on the support vessel.

Much of the training need not be regulated if acceptable guidelines can be developed, are followed and can be monitored. All training should be designed to bring confidence to the trainee and this can be achieved if training is practical and taught on the type of equipment in actual use.

Safety training is rarely tested in practice and regular drills and refresher training are needed so it is not forgotten.

The crews of standby/rescue vessels, in addition to their normal seamen's skills, need specialist knowledge. In particular the crews of fast rescue boats need regular training and practice, but all crew members must be trained to recover and launch the fast rescue boats, to recover survivors from the water, and give initial treatment for hypothermia and drowning. There should be flexibility, permitting a wide range of interchangeability



Conclusions on Marine Support Training:

Masters and Mates of support vessels, in addition to their marine certification and experience, need training in some or all of the following topics, depending on the type of vessel on which they are employed:

characteristics of construction, stability, seakeeping, ballasting and cargo carrying arrangements of the specialized vessel;

ship handling and holding station by means of twin propellors, twin independent rudders and thrusters;

standby and rescue including deployment of fast rescue craft, and recovery of survivors from lifeboats, rafts and the water;

offshore cargo transfer, anchor handling;

iceberg towing;

diving support;

dynamic positioning;

MODU disasters, including blow-outs and maritime accidents.

- 2. All crew members regularly employed on support vessels should have the same level of training in basic safety and survival as MODU crews, including training on specialized life saving appliances not covered by MED II.
- 3. Deck hands who engage in certain hazardous offshore activities such as anchor handling, cargo transfer and iceberg towing should have specialist training and work under supervision until fully experienced.



- 4. Drills for seamen are essential for monitoring emergency skills. Changing scenarios are also essential.
- 5. Training for engineers is fairly satisfactory in terms of quality of content. The major problem in Canada is insufficient candidates for the senior levels.
- 6. Two possible areas for improvement in the content of engineers' training are: to keep training up to date with state-of-the-art technologies, and to offer specialist training in new technologies, as optional subjects.
- 7. For electronic technicians, the formal training available is satisfactory. The main requirement is for employers to hire competent persons and ensure they are trained for the specific equipment they will use.
- 8. Diving supervisors need prior knowledge of divers and diving, but training on the specifics of vessels and their equipment is best acquired on the job.
- 9. The role of the standby vessel has not been sufficiently defined for the necessary duties to be fully understood. The use of supply or anchor handling vessels in the secondary standby/rescue role means that, to provide an effective service, many more persons must be trained than if dedicated vessels are used.
- 10. The training of deck hands of vessels during standby/rescue duties off Eastern Canada is inadequate in the use of the specialized equipment, new techniques and handling large numbers of casualties.
- 11. A pre-requisite for standby/rescue vessel crews should be considerable seafaring experience, preferably on vessels of equivalent size.



- 12. A course needs to be developed which gives the crew a thorough grounding in standby/rescue duties.
- 13. On the job practice is essential, particularly where fast rescue boats are employed, so that the crew can operate to the limits of the craft in bad weather. A stable crew membership greatly enhances the effectiveness of this practice, by developing teamwork.



6. AIRCRAFT SUPPORT

Air support for offshore operations off Eastern Canada is exclusively by twin-engined helicopters, fully equipped and crewed for instrument flying. Government control of flying is extremely tight with respect to equipment, personnel and operations.

Local offshore helicopters are equipped to carry hoists, which together with rescue equipment are held ready onshore, but no rescue specialists are employed. In other offshore areas, such as the North Sea, government search and rescue services are more developed than in Eastern Canada. However in the North sea sector several operators themselves maintain quite extensive search and rescue capabilities in multi-platform fields or remote areas. Eastern Canada is not yet at the stage of oil field development where this is feasible. Government/military capabilities are not the subject of this report, but Canadian commercial helicopters could, at least under daylight visual flight rule conditions, mount SAR operations, given the proper training of the crew.

Escape from a helicopter down in the sea (helicopter under water escape training or 'HUET), in-flight cabin fire fighting and first aid, all need to be considered for flight crew training, and HUET at least for passengers too.

Conclusions on Aircraft Support

General:

- 1. Regulations for aircrew training are strict and basic flying training for helicopter crews, coupled with operating company requirements for experience are adequate.
- 2. Canadian SAR services are not adequate for the vast offshore area and have to be supplemented by operating companies' helicopters, which are less well equipped for rescue and do not have specially trained crews.



3. Local offshore helicopters are equipped to carry hoists, which together with other rescue equipment are held ready onshore.

Canadian needs:

- 1. All round emergency training should be considered for the crew, especially HUET and inflight cabin fire fighting. No facilities yet exist for HUET.
- 2. Survival and first aid training for crew members would enable them to deal with emergencies, while awaiting assistance.
- 3. At present no formal training courses in rescue exist, although some companies provide their own capabilities. Consideration needs to be given to the provision of SARTECH training of civilian personnel, if the military SAR capability cannot be developed.



7. GENERAL CONCLUSIONS

In this report conclusions have been drawn on training in various aspects of offshore activity. In addition to the conclusions specific to MODUs, and their marine and aircraft support, there are some factors which affect all offshore training in the Eastern Canadian region. These are set out below:

- 1. Environmental conditions off Eastern Canada are bad, with rough weather, fog and the possibility of icebergs and pack ice.
- 2. The area of operation can be far offshore and isolated from centres of population.
- 3. Training is needed for aspects of safety, rescue and general operation. This needs to take into account the specifics of the harsh and isolated region.
- 4. Canada has a history of marine training and land based drilling training, with important and reputable establishments. Some of these have developed training for offshore or MODU operations.
- 5. A representative national (or at least an East Coast) forum, enabling operators, contractors and training establishments to discuss and establish training standards with national and provincial Governments would help ensure that the training met with general acceptance with respect to standards and economy.
- 6. Good training is expensive full size equipment and elaborate simulators are needed for some aspects of offshore training. A means for funding further developments needs to be established. At the same time it must be born in mind that expenditure on training can increase to any amount available, and suitable controls need to be established.



- 7. Government recognition of courses and qualifications, with proper monitoring, helps to ensure high standards and wide acceptability.
- 8. Regulations or other Government legislation may be needed to achieve some of the necessary results.
- 9. Regular drills are needed to keep the training fresh in the minds of all personnel.







